



PRINTED RESISTIVE HEATERS

Introducing our flexible Printed Resistive Heater Technology, a game-changing advancement in the realm of heating technology and a real alternative to wire-based heating systems.



Introducing the innovative realm of printed resistive heaters. These heaters comprise an electrode layout that generates heat when voltage is applied. We craft the electrodes from printed silver, printed copper, edged copper, aluminum, or other methods for structuring ultra-thin metal layers. What sets these heaters apart is their flexibility, stretchability, and the option to be back-injection molded or back-foamed directly into components. They can also be seamlessly affixed to surfaces using adhesive lamination, with a wide array of adhesive tapes available to cater to diverse adhesion requirements. Printed resistive heaters offer a versatile heating solution, suitable for a range of applications, from industrial to commercial and more. Their adaptability and efficiency make them an ideal choice for various heating needs.

SPECIFICATIONS

- Voltage Range: 9 VDC up to 1000 VDC
- Power density: up to 350.000 W/m²
- Temperature Range: -40 °C to 350 °C
- Integration Method: Lamination, Back-Injection-Molding, Back-Foaming, Adhesive Bonding
- Dielectric Strength: 10 kV
- Thermoformable: yes
- Size: up to 1,4m²

ADVANTAGES OF PRINTED RESISTIVE HEATERS

- High active heated area (up to 60%).
- High heating power and fast heat-up times with reduced maximum heating track temperature.
- Thin layer setup with an overall heating mat thickness starting from 0.1 mm.
- Different heating and heating power zones are possible.
- Fully encapsulated against fluids, dust, and chemicals (IP 68).
- Applicable for any shape or surface contour without restrictions on curvature and complexity.
- Various integration methods possible (lamination, back foaming, back injection molding).
- Seamless integration of several additional functionalities through additional printed layers without influencing the mat's local thickness or haptic appearance.

CUTTING EDGE TECHNOLOGY

- For added functionality, an optional printed NTC sensor based on our patented NTCsense® technology can be seamlessly integrated, enabling precise temperature detection and monitoring across the entire heater surface.

ABOUT ATT

ATT is a leading provider of surface heating systems utilizing thermoelectric heating polymers. With a focus on the Automotive industry, the company also offers solutions for Aerospace and Architecture applications. In addition to surface heating systems, ATT is continuously advancing their offerings with the development of advanced sensors including ultrathin real-time temperature sensors, hot-spot sensors for batteries, icing sensors for aircraft wings, and printable NTC sensors based on proprietary technologies.

MARKET



Mobility



Healthcare



Traditional Electronics



Furniture & Building



IoT Antennas



Industry



Consumer Goods

FURTHER READING:

<https://www.themaltech.at/printed-resistive-heaters/>